WHAT IS CLAIMED IS:

1. A method for isolating and purifying nucleic acids, which comprises:

providing a mixed solution containing the nucleic acids salts, and at least one organic solvent;

absorbing the nucleic acids on an adsorption support;

washing the support adsorbed with the nucleic acids with a washing buffer;

desorbing the nucleic acids from the support with an elution buffer thereby recovering the nucleic acids, wherein

said organic solvent includes at least one compound containing 2 to 10 carbon atoms selected from the group consisting of aliphatic ether, aliphatic ester, and aliphatic ketone.

2. The method for isolating and purifying nucleic acids as claimed in Claim 1, wherein the organic solvent comprises at least one of ethylene glycol dimethyl ether, ethylene glycol diethyl ether, propylene glycol dimethyl ether, propylene glycol diethyl ether, diethylene glycol dimethyl ether, diethylene glycol diethyl ether, tetrahydrofuran and 1,4-dioxane.

3. The method for isolating and purifying nucleic acids as claimed in Claim 1, wherein the organic solvent comprises at least one of propylene glycol monomethyl ether acetate, and ethyl lactate.

4. The method for isolating and purifying nucleic acids as claimed in Claim 1, wherein the organic solvent comprises at least one of hydroxyacetone, acetone, and methyl ethyl ketone.

5. The method for isolating and purifying nucleic acids as claimed in Claim 1, wherein the organic solvent comprises at least one of aliphatic ether, aliphatic ester, and aliphatic ketone.

6. The method for isolating and purifying nucleic acids as claimed in Claim 1, wherein the concentration of the organic solvent in said mixed solution is not more than 50% by volume.

7. The method for isolating and purifying nucleic acids as claimed in Claim 6, wherein the concentration of the organic solvents in said mixed solution is 5% to 50% by volume.

8. The method for isolating and purifying nucleic acids as claimed in Claim 1, wherein said mixed solution contains a surfactant at no more than 50% by volume.

9. The method for isolating and purifying nucleic acids as claimed in Claim 8, wherein said mixed solution contains a surfactant at 5% to 50% by volume.

10. The method for isolating and purifying nucleic acids as claimed in Claim 1, wherein said mixed solution contains a defoaming agent at 0.2% to 2.5% by volume.

11. The method for isolating and purifying nucleic acids as climed in Claim 1, further comprises:

providing a column with a bottom;

placing the support above the bottom;

causing the mixed solution to pass one-way through the support to the bottom by a sucking force.

12. The method for isolating and purifying nucleic acids as claimed in Claim 11, whereby the causing step, the mixed solution also passes through the support the other way by an opposite sucking force

13. The method for isolating and purifying nucleic acids as claimed in Claim 12, whereby the causing step, the mixed solution passes through the support a number of times to enhance adsorption efficiency.

14. A reagents kit for use in isolating and purifying nucleic acids by causing the nucleic acids to be adsorbed on an adsorption support, comprises a mixed solution containing salts and an organic solvent for enabling adsorption of nucleic acids, a washing buffer, and an elution buffer, wherein the organic solvent comprises at least one compound containing 2 to 10 carbon atoms selected from the group consisting of aliphatic ether, aliphatic ester, and aliphatic ketone.

15. The reagents kit as claimed in Claim 14, wherein the organic solvent comprises at least one of ethylene glycol dimethyl ether, ethylene glycol diethyl ether, propylene glycol dimethyl ether, propylene glycol diethyl ether, diethylene

glycol dimethyl ether, diethylene glycol diethyl ether, tetrahydrofuran, and 1,4-dioxane.

16. The reagents kit as claimed in Claim 14, wherein the organic solvent comprises at least one of propylene glycol monomethyl ether acetate, and ethyl lactate.

17. The reagents kit as claimed in Claim 14, wherein the organic solvent comprises at least one of hydroxyacetone, acetone, and methyl ethyl ketone.

18. The reagents kit as claimed in Claim 14, wherein the organic solvent comprises at least one of aliphatic, aliphatic ester, aliphatic ketone.